

### REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on October 21, 2003, and the references cited therewith.

Claims 27-28 are amended, and claims 31-56 are added; as a result, claims 1-56 are now pending in this application. No new matter is added.

#### §102 Rejection of the Claims

Claims 1, 3, 5, 8-10, 13-16 and 18-24 were rejected under 35 USC § 102(b) as being anticipated by Collins et al. (U.S. 6,018,125). Applicant respectfully traverses. Collins describes an EMI shield that includes a plastic core having a conductive (e.g., metal) coating (column 2 line 60) such as nickel over copper (column 4 lines 11-17). This coating of Collins is conductive and reflective, not absorbing. Even though the conductive or metal coating of Collins might not allow EMI through at lower frequencies, the reflected EMI within an enclosure is likely to have deleterious consequences. Further, at higher frequencies (e.g., above about 4.5 GHz), significant EMI is emitted through such apertures, if they are formed of or coated with a conductor such as zinc paint. As noted on the bottom of page 2 of the present application:

“The EMI leaving the chassis passes through the waveguide cells and interacts with the waveguide cell walls, which are made of metal and sometimes coated with a zinc-based paint for aesthetics. The EMI drives a surface current in the walls, which re-radiate at an attenuated level, thereby reducing the amount of outputted EMI. The waveguide apertures also allow heated air trapped in the chassis to escape.

FIG. 1 is a plot of the absolute radiation level  $E_{max}$  in decibel-microvolts/meter (dB- $\mu$ V/m) versus EMI frequency in gigahertz (GHz) for a conventional metal waveguide shield coated with zinc paint, based on computer simulation. The plot illustrates that the conventional metal waveguide shield does not provide adequate EMI shielding above 4.5 GHz. With the advent of CPUs that operate in the GHz range and beyond, conventional waveguide shields will not be able to provide adequate protection from EMI without significantly reducing the size of the waveguide apertures.”

In contrast the present invention describes and claims “An electromagnetic interference (EMI) shield comprising: a waveguide body including an array of waveguide cells each having a contiguous inner surface; and an absorber layer covering at least a portion of each contiguous

inner surface and capable of absorbing electromagnetic radiation over a select frequency range.” This is neither described nor obvious from the cited reference. Accordingly, claims 1, 3, 5, 8-10, 13-16 and 18-24 appear to be in condition for allowance, and reconsideration and withdrawal of the rejection is respectfully requested.

*§103 Rejection of the Claims*

Claims 2 and 12 were rejected under 35 USC § 103(a) as being unpatentable over Collins et al. in view of Mitchell (U.S. 6,426,459). Applicant respectfully traverses. As discussed above, Collins describes a conductive coating on a perforated insulating substrate to form waveguide attenuating holes, not an absorber layer coating. Mitchell describes an EMI shielded vent having an electrically conductive porous shielding member (Col 3 lines 9-15) such as cellular aluminum or metal honeycomb (Col 3 line 36-37). There is no mention in Mitchell of waveguide structures or designs. There is no mention in Collins of a need to improve ventilation beyond the circular holes described. Thus, there is no motivation to combine as proposed by the Examiner. Further, any combination does not provide an absorber layer, nor an absorbing layer on an insulating substrate or frame to form waveguide openings. Accordingly, claims 2 and 12 appear to be in condition for allowance, and reconsideration and withdrawal of the rejection is respectfully requested.

Claims 4, 6, 7, 17 and 25-26 were rejected under 35 USC § 103(a) as being unpatentable over Collins et al. Applicant respectfully traverses. The Examiner asserts, without further support that the shape of waveguide, absorber layer thickness, and resistivity would have been obvious design considerations. Applicant respectfully traverses each of these assertions, and again respectively requests under MPEP 2144.03 that the Examiner cite a reference in support of each of his positions. Further, based on the Examiner’s citing these references to conductive (metal or metal-coated) vents, the claimed invention’s choice of a range resistivity cannot be considered obvious. Further, each of these claims depends from an independent claim that, for the reasons discussed above appears to be in condition for allowance. Accordingly, claims 4, 6, 7, 17 and 25-26 appear to be in condition for allowance, and reconsideration and withdrawal of the rejection is respectfully requested.

Claim 11 was rejected under 35 USC § 103(a) as being unpatentable over Collins et al. in view of Narang et al. (U.S. 5,976,666). Applicant respectfully traverses. Narang discusses (but has no drawings) a perforated absorber layer, but only as laminated to a metal (i.e., conductive) plate, not an insulating vented substrate. Further, although the perforations (e.g., col. 12 lines 34-49) and plate (col. 12 lines 5058) are described somewhat (without Figures), Applicant cannot find a description that indicates the metal plate itself is perforated, or vented, or allowing flow of heat. Thus, there appears to be no motivation to combine, as suggested by the Examiner, an absorbing layer stripped off a metal plate from Narang, and instead applied to an insulating grid instead of the metal layer described by Collins. Further, claim 11 depends from independent claim 1 that, for the reasons discussed above appears to be in condition for allowance. Accordingly, claim 11 appears to be in condition for allowance, and reconsideration and withdrawal of the rejection is respectfully requested.

New means-plus-function claims 31-43 are added to more fully describe the claimed invention. Claim 31 is supported by Figure 8 and page 7 line 5, claim 32 at page 6 line 16, claim 33 by Figure 8B, claim 34 at page 6 line 27, claim 35 by Figure 5A, claim 36 by Figure 4A, claims 37-38 by Figure 7, claim 39 at page 5 line 2, claim 40 at page 4 line 30, claims 41-42 at page 4 line 29. Claim 43 is supported on page 5 lines 22-23. Consideration of these claims under 35 U.S.C. 112, paragraph 6 is respectfully requested.

New claims 44-45 are supported on page 6 lines 1-2.

New independent claim 46 is supported by original claim 1, figure 8 and page 7 lines 6-11. Claims 47, 48 and 50 are supported at page 6 lines 1-6. Claim 49 is supported at page 4 line 30. Claim 51 is supported at page 6 line 16. Claim 52 is supported at page 7 line 6. Claim 53 is supported at Figure 4A. Claim 54 is supported at Figure 5A. Claims 55-56 are supported at Figure 8B.

Serial Number: 10/027345

Dkt: 884.690US1 (INTEL)

Filing Date: December 20, 2001

Title: WAVEGUIDE WITH EMI ABSORBING COATINGS

Assignee: Intel Corporation

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Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612-349-9592) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS RCE, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 21st day of April, 2004.

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